CALIFORNIA ENERGY COMMISSION

California Outdoor Lighting Baseline Database

California Outdoor Lighting Analysis Database
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TECHNICAL REPORT

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PREFACE

The Public Interest Energy Research (PIER) Program supports public interest energy research and development that will help improve the quality of life in California by bringing environmentally safe, affordable, and reliable energy services and products to the marketplace.

This document is one of 33 technical attachments to the final report of a larger research effort called *Integrated Energy Systems: Productivity and Building Science Program* (Program) as part of the PIER Program funded by the California Energy Commission (Commission) and managed by the New Buildings Institute.

As the name suggests, it is not individual building components, equipment, or materials that optimize energy efficiency. Instead, energy efficiency is improved through the integrated design, construction, and operation of building systems. The *Integrated Energy Systems: Productivity and Building Science Program* research addressed six areas:

- Productivity and Interior Environments
- Integrated Design of Large Commercial HVAC Systems
- Integrated Design of Small Commercial HVAC Systems
- Integrated Design of Commercial Building Ceiling Systems
- Integrated Design of Residential Ducting & Air Flow Systems
- Outdoor Lighting Baseline Assessment

The Program's final report (Commission publication #P500-03-082) and its attachments are intended to provide a complete record of the objectives, methods, findings and accomplishments of the *Integrated Energy Systems: Productivity and Building Science Program*. The final report and attachments are highly applicable to architects, designers, contractors, building owners and operators, manufacturers, researchers, and the energy efficiency community.

This attachment, "California Outdoor Lighting Analysis Database" (Attachment A-33), provides supplemental information to the program's final report within the **Outdoor Lighting Baseline Assessment** research area. This database, which contains the complete data of the California Outdoor Lighting Assessment, is 86 MB and is only available by mail (it is not available for downloading from the PIER website).

The Buildings Program Area within the Public Interest Energy Research (PIER) Program produced these documents as part of a multi-project programmatic contract (#400-99-413). The Buildings Program includes new and existing buildings in both the residential and the non-residential sectors. The program seeks to decrease building energy use through research that will develop or improve energy efficient technologies, strategies, tools, and building performance evaluation methods.

For other reports produced within this contract or to obtain more information on the PIER Program, please visit www.energy.ca.gov/pier/buildings or contact the Commission's Publications Unit at 916-654-5200. All reports, guidelines and attachments are also publicly available at www.newbuildings.org/pier.

ABSTRACT

The "California Outdoor Lighting Baseline Database" was produced as part of the Outdoor Lighting Baseline Assessment project. This was one of six research projects within the *Integrated Energy Systems: Productivity and Building Science* Program, funded by the California Energy Commission's Public Interest Energy Research (PIER) Program.

The California Outdoor Lighting Baseline Assessment is the first major study to provide real data about commercial building outdoor lighting in the state. The report identifies statewide outdoor lighting design practices; estimates energy demand and consumption; and provides a framework for outdoor lighting standards in California and future investigations of outdoor lighting.

As part of the research project, an MS Access database was developed that contains site and outdoor lighting information for more than 300 surveyed sites. The data includes overall site area; building type; site user questionnaire on outdoor lighting types, use schedules, controls, and subjective comments; lighting area "Functional Use Areas"; weather conditions and surrounding information; luminaire information; sign information; glare ratio measurements; light trespass measurements; and outdoor lighting measurements for illumination and uniformity.

The report, "California Outdoor Lighting Baseline Assessment"(Attachment 18), provides a detailed description of the information contained in this database.

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Key words: outdoor lighting, lighting design, building lighting, façade lighting, lighting controls, lighting power density, light trespass, exterior lighting, lighting code, lighting survey